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MICROSCOPY.[1]

THE EGGS OF AMPHIBIA.—I have found *hypochlorite of sodium* an excellent solvent for the gelatinous envelope of the amphibian egg. I obtained a ten per cent. solution, and diluted it with five or six times its volume of water. The eggs are first hardened by heating, or by immersion in some preservative fluid; then placed in the Labarraque solution until the gelatinous envelopes are so far dissolved that the eggs may be easily shaken free. They are then washed and preserved in alcohol. This method works perfectly with the eggs of Necturus, and has given equally good results with the eggs of the frog. The time required for dissolving the envelope in the case of Necturus is about five minutes. Care should of course be taken not to leave the eggs exposed to the solvent longer than is necessary in order to destroy the envelope.

EXPERIMENTS WITH CHITIN SOLVENTS BY T. H. MORGAN.[2]—The first experiments were made upon the eggs of the common cockroach, and the selection turned out to be a most fortunate one. A great many eggs are laid at one time, the whole number being surrounded by a stiff chitinous coat, forming the so-called raft.

The solvents used were the *hypochlorites of sodium* and *potassium*, recommended by Dr. Looss in 1885.

The most successful experiments on the cockroach's eggs were as follows:

1. The rafts were placed, in a fresh condition, in a weak solution of *eau de Labarraque* (commercial fluid diluted with five or six times its volume of water), and left until the chitinous envelope became soft and transparent. The time varies; if *slightly warmed* the time is less, for the warm solution perhaps thirty minutes to one hour; but one must go more by the appearance of the chitin than by any definite time. If the embryos are far advanced they may now be removed from the envelope one by one; if still young, they had better be hardened and cut altogether. In both cases the eggs or embryos were next washed for a few minutes in water, and then transferred for an hour to picro-sulphuric acid, then as usual they are passed through the grades of alcohol, 70 per cent., 80 per cent., 95 per cent.

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[1] Edited by C. O. Whitman, Director of the Lake Laboratory, Milwaukee.

[2] Studies from the Biological Laboratory, Johns Hopkins University, Vol. iv., No. 4, p. 217, 1888.

2. To specimens which have been already hardened and preserved the solvent may also be applied; but in all cases where fresh material is easily obtainable, it should immediately have its chitin softened and then afterwards be preserved. Here the method is somewhat shorter, since the substance has been previously hardened. From alcohol—weak solution—they are put into the Labarraque and softened as above, then passed through water and the alcohols, etc.

In most cases in which an animal egg or embryo is encased in chitin, the best results have been obtained by staining the sections after they have been cut and fixed to the slide. If the specimen is small, staining *in toto*—after having the chitin softened, or if before this has taken place, after having made an entrance through the chitin with a point of a needle—is equally good. The greatest difficulty, and practically the only one which one meets with, is that the Labarraque solution not only attacks the chitin itself, but after a time the soft tissues of the animal—apparently the connective tissue. Where the chitin surrounds the object completely, as in the case with the roach's raft, one can remove the object from the solution as soon as the chitin is softened, and before the underlying parts have been attacked. In cases like this the solvent is at its best.

Very often, however, the soft tissues of the animal are exposed in places between the chitin covering. This is well illustrated by the joints of insects' legs, etc., and very frequently these exposed places are attacked before the chitin is completely softened, thus causing the joints, if much handled, to fall apart.

By judiciously diluting the solution and taking the parts to be softened from it before the joints are attacked, one will find its application practicable even here.

The greatest difficulty of all is when the chitin is internal, completely surrounded by soft tissue. So far as I have made any experiments here, I find that one gets better results with very dilute solutions—diluted from eight to ten times, or even more. It must be admitted that in this last case the application of the solvent is more doubtful, and of not nearly so much service as in the first and second supposed cases.

Strong solutions, then, had better be used only when the chitin completely surrounds the soft animal parts, and dilute solutions must be used in all cases where these latter substances are exposed. The solution not only softens the chitin, but *removes all pigment* either in the chitin or in the tissue beneath, and this is at times advantageous.

THE USE OF CELLOIDIN IN MAKING DEMONSTRATION-PREPA-

RATIONS OF THE BRAIN.[1]—Methods of making dry preparations of the brain for purposes of demonstration have been recommended by Giacomini, Laskowski, Broca, Duval, Schwalbe, and others. The method employed by Dr. Lenhossék of Budapest differs from all these, as the preparations are to be kept in alcohol, except when used for demonstration. For this purpose, they are removed from the alcohol and carefully dried in soft linen. They bear handling well, and are not injured by an exposure of two hours. They begin to shrink, however, if not returned to the alcohol after the lapse of this time.

Preparation.—1. Alcohol supplies the best means of hardening, as it well preserves the color and form. If other reagents are employed, such as zinc chloride, Müller's fluid, etc., the preparation must lie in alcohol awhile before further treatment.

2. The hardened preparation is removed from the alcohol, made dry superficially by careful application of soft linen, and then coated with a thin layer of celloidin, applied with a fine brush. The celloidin is dissolved in a mixture of equal parts of strong alcohol and ether, as for imbedding. The furrows are not to be filled with the celloidin solution, but the walls must be carefully and thoroughly painted. In order to keep them open during the process of hardening, it is well to fill them with cotton or with blotting-paper.

Within five or ten minutes the celloidin dries to a thin, transparent, tough membrane, which protects the preparation and gives it greater firmness.

DRY PREPARATIONS OF THE BRAIN.—The method of impregnating the brain with paraffine was first employed by Fredericq,[2] in 1876. Schwalbe[3] adopts essentially the same method for the human brain, proceeding as follows:

1. Hardened in zinc chloride or in alcohol.

2. After removing the membranes, cut into a number of suitable pieces, as it is not advisable to impregnate the brain *in toto*.

3. After dehydrating in 96 to 97 per cent. alcohol, soak in turpentine until completely saturated.

4. Impregnate with soft paraffine, kept at 60°C. (five to eight days.

5. The paraffinized preparation is placed on a layer of cotton to cool, care being taken to give it such a position as to avoid deformation.

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[1] Michael v. Lenhossék. "Celloidinbehandlung des Gehirns zur Herstellung von Demonstrations-präparaten." Anat. Anz. ii., 3, p. 77. Feb., 1887.

[2] Bull. de l'Acad. roy. de Belg., 2 ser., xl., June, 1876.

[3] Anat. Anz., i., No. 12, p. 322, Nov., 1886.